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BIOMEDICAL EQUIPMENT MAINTENANCE CAREER LADDER AFSCS 40330, 403--ETC(U)
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OCCUPATIONAL SURVEY REPORT.



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6 BIOMEDICAL EQUIPMENT MAINTENANCE
CAREER LADDER

AFSCs 40330, 40350, 40370, and 40390.

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OCCUPATIONAL SURVEY BRANCH ✓
USAF OCCUPATIONAL MEASUREMENT CENTER
LACKLAND AFB TEXAS 78236

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SUMMARY OF RESULTS

1. Survey Coverage: Survey results are based on 306 respondents from the Biomedical Equipment Maintenance (AFS 403X0) career ladder. This represents 73 percent of the assigned personnel.
2. Career Ladder Structure: One supervisory group and nine groups of maintenance personnel were identified.
3. Career Ladder Progression: The largest portion of the job time for the total sample was spent maintaining laboratory, dental, and general hospital equipment. Maintenance tasks are performed by personnel of all skill levels. Maintenance management procedures are also performed at all skill levels. Somewhat unusual is the fact that 9-skill level personnel perform maintenance tasks as well as supervisory tasks.
4. AFM 39-1 Evaluation: Specialty descriptions are well supported by survey data.
5. CONUS/Overseas Differences: Overseas personnel indicated a higher average number of tasks performed than CONUS personnel.
6. STS Review: The STS is well supported by survey data.
7. Job Satisfaction: Survey respondents indicated average job interest and perceived utilization of training when compared with personnel in other career ladders surveyed in 1976. First enlistment personnel indicated above average perceived utilization of talents.
8. Reenlistment Patterns: Plans to reenlist were slightly below average compared to other career ladders surveyed but actual reenlistments for first term personnel were 1.8 times greater than the average for all Air Force specialties. Reenlistment rates for second term and career personnel are below the average for all Air Force specialties.
9. Career Field Experience: The number of personnel with more than 8 years experience has declined by 50 percent since 1973.

PREFACE

This report presents the results of a detailed Air Force Occupational Survey of the Biomedical Equipment Maintenance Career Ladder, AFSC's 40330, 40350, 40370, and 40390. The project was directed by USAF Program Technical Training, Volume 2, dated February 1976. Authority for conducting specialty surveys is contained in AFR 35-2. Computer outputs from which this report was produced are available for use by operating and training officials.

The survey instrument was developed by Captain Hynson H. Marvel, Jr. He also analyzed the survey data and wrote the final report. This report has been reviewed and approved by Mr. Paul N. DiTullio, Chief, Maintenance Career Ladders Analysis Section, USAF Occupational Measurement Center, Lackland AFB, Texas 78236.

Computer programs for analyzing the occupational data were designed by Dr. Raymond E. Christal, Occupational and Manpower Research Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Project Analysis and Programming Branch, Computational Sciences Division, AFHRL.

Because volume reproduction of this report is not feasible, distribution is made on a loan basis to air staff sections and major commands upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Lackland AFB, Texas 78236.

This report has been reviewed and is approved.

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OCCUPATIONAL SURVEY REPORT
BIOMEDICAL EQUIPMENT MAINTENANCE CAREER LADDER
(AFSC'S 40330, 40350, 40370, AND 40390)

INTRODUCTION

This is a report of an occupational survey of the Biomedical Equipment Maintenance Career Ladder, (AFSC's 40330, 40350, 40370, and 40390), conducted by the Occupational Survey Branch, USAF Occupational Measurement Center.

The report describes: (1) development and administration of the survey instrument; (2) summaries of tasks performed by airmen grouped by skill level, experience level, and similarity of tasks performed; (3) comparisons with current training and career field structure documents; and (4) conclusions.

INVENTORY DEVELOPMENT AND ADMINISTRATION

The data collection instrument for the occupational survey was USAF Job Inventory AFPT 90-403-287. The inventory booklets were composed of two parts: a background information section in which job incumbents provided information about themselves; and a duty-task list section which assessed the relative amount of time spent on tasks performed by personnel in their current jobs. The latter section consisted of 1,294 tasks grouped under 21 headings. Thorough research of publications and directives, personal interviews with 19 subject-matter specialists at four bases, and written reviews from 48 experienced Biomedical Equipment Maintenance personnel contributed to the development of the survey instrument.

Consolidated base personnel offices in operational units worldwide received the inventory booklets for administration to job incumbents holding the DAFSCs identified above. Survey administration occurred from 29 September 1976 through 6 January 1977 based upon the September 1976 Uniform Airman Record. Tables 1 and 2 give the distribution of assigned personnel in the career ladder as of July 1976 and the percentage by major command of inventory booklets returned from the field. The sample of 306 incumbents represents 73 percent of career ladder members.

After supplying identification and biographical information, incumbents checked and rated the tasks performed in their current job. Tasks were rated on a 9-point scale showing relative time spent on each task compared to all other tasks performed in the current job.

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The ratings ranged from 1 (very-small-amount time spent) through 5 (about-average time spent) to 9 (very-large-amount time spent). Respondents did not rate tasks not performed in their current job.

In the development of the job inventory, every effort was made to include all duties and tasks of importance to the accuracy and completeness of the survey. However, due to the possibility of inadvertent omissions, instructions for completing the inventory urged respondents to write in any duties or tasks not listed. In this survey, no significant write-ins were received.

TABLE 1
SKILL LEVEL REPRESENTATION

<u>SKILL LEVEL</u>	<u>PERCENT ASSIGNED STRENGTH</u>	<u>PERCENT OF SAMPLE STRENGTH</u>
3/5	63	56
7	34	40
9	12	4

TABLE 2
COMMAND REPRESENTATION

<u>COMMAND</u>	<u>PERCENT ASSIGNED</u>	<u>PERCENT SAMPLE STRENGTH</u>
ATC	17	17
SAC	17	16
MAC	12	13
USAFE	12	7
TAC	11	15
AFSC	11	13
PACAF	7	8
AFLC	5	6
OTHER	8	6

SUMMARY OF BACKGROUND DATA

Each USAF job inventory contains a section for background data in which survey respondents provide biographical information about themselves and report their feelings and perceptions of their jobs. Table 3 summarizes background data collected relative to job interest, perceived utilization of talents, perceived utilization of training, and reenlistment intentions.

Because of the high percentage of no response to job interest entries, figures must be interpreted with caution. Most respondents indicated that their talents were being used at least fairly well; the same is true for training utilization. First term airmen indicated somewhat more positive responses to the item on the utilization of talents than their peers in other ladders surveyed in 1976.

Reenlistment intentions for first enlistment personnel generally parallel other career ladders; however, for incumbents in later enlistment groups the percentages reporting they would definitely or probably reenlist were below average in comparison to respondents in other career ladders. As with job interest the number of persons who did not respond to the reenlistment item makes analysis tenuous. The actual reenlistment rate in FY 76 for first term Biomedical Equipment Repair personnel airmen was 68 percent versus 37 percent for all Air Force specialties combined. The high rate for first term airman appears to be due to a combination of good feelings toward utilization of their talents, as mentioned earlier, and the large number of personnel who have retrained into the ladder from other specialties. Sixty-three percent of the 49-96 months AFMS group are cross-trainees.

There are 105 medical maintenance shops in the Air Force. They range in size from one to nineteen Biomedical Equipment Maintenance (AFS 403X0) personnel. Twelve facilities have nine or more personnel assigned. These facilities are large hospitals or medical centers and are designated as medical equipment repair centers (MERC). Part of their manning consists of traveling maintenance teams which service smaller facilities on a periodic schedule and on an emergency basis. Sixty-two medical maintenance shops have one or two personnel authorized. The personnel in these small hospitals and clinics must rely on the MERC for assistance on maintenance beyond their capability or experience.

TABLE 3

JOB INTEREST, UTILIZATION OF TALENTS AND TRAINING AND REENLISTMENT
INTENTION FOR FIRST ENLISTMENT AND CAREER PERSONNEL IN PERCENT
MEMBERS RESPONDING

	MONTHS OF SERVICE			
	403X0		COMBINED CAREER LADDERS SURVEYED DURING 1976	
	0-48	49-240+	0-48	49-240+
<u>JOB INTEREST</u>				
I FIND MY JOB:				
DULL	3	4	17	9
SO-SO	10	5	18	11
INTERESTING	62	67	65	80
NO RESPONSE	25	24	-	-
<u>PERCEIVED UTILIZATION OF TALENTS</u>				
MY JOB UTILIZES MY TALENTS:				
VERY LITTLE OR NOT AT ALL	11	16	29	15
FAIRLY WELL OR BETTER	89	84	71	85
<u>PERCEIVED UTILIZATION OF TRAINING:</u>				
MY JOB UTILIZES MY TRAINING:				
VERY LITTLE OR NOT AT ALL	15	16	21	17
FAIRLY WELL OR BETTER	81	82	79	83
NO RESPONSE	4	2	-	-
<u>REENLISTMENT INTENTIONS</u>				
NO OR PROBABLY NO	53	30	57	27
YES OR PROBABLY YES	39	63	43	73
NO RESPONSE	8	7	-	-

CAREER LADDER STRUCTURE

The job structure of the Biomedical Equipment Maintenance career ladder was determined on the basis of similarities in the tasks performed and the time spent on tasks by respondents to the survey. Individuals with the greatest similarities in job performance were placed together. Groups of individuals with the highest degree of overlap form job type groups; similar job types combine to form job clusters. Differences between clusters are more pronounced than differences between job groups within a cluster.

The major job groupings identified during this analysis are presented in Figure 1. The titles assigned to these groups are functional descriptions of the group based on tasks performed and time spent on these tasks. Detailed descriptions of the job groups are in Appendix A. The ten job types and clusters account for 87 percent of the sample. The remaining 13 percent were not similar in task performance to any of these ten groups.

GROUP DESCRIPTIONS

Brief descriptions of identifiable job groups are given below. It is important to keep in mind the high overlap in task performance within this career ladder. The groups thus reflect fine differences in time spent on tasks from one duty or another and number of tasks performed.

The average biomedical equipment maintenance airmen, who responded to the survey, performed maintenance in many areas of the clinic or hospital facility. Nearly one third of their time was spent performing tasks associated with Maintaining Dental Equipment (Duty M), Maintaining Laboratory Equipment (Duty K), and Maintaining General Hospital Equipment (Duty R). Although Maintaining X-Ray Equipment (Duty H) tasks were considered the most difficult by supervisors in the field, 95 percent of the survey respondents indicated performing at least one task from that duty.

Dental Equipment Maintenance Technician (GRP077)

Members of this cluster spend more time (18 percent) than any other group on Maintaining Dental Equipment (Duty M) tasks. They are assigned to clinics and small hospitals. Seventy-nine percent are working in shops with one or two positions authorized. They receive periodic maintenance assistance from traveling maintenance teams assigned to Medical Equipment Repair Centers (MERC). While maintenance tasks are predominate for this group because they are responsible for all the biomedical equipment in the facility, they are also performing their own maintenance management and administration.

Biomedical Equipment Repairman (GRP71)

Fifty percent of the survey respondents are in this cluster. Sixty-seven percent of these personnel are assigned to USAF Hospitals and

DENTAL EQUIPMENT
MAINTENANCE TECHNICIAN

GRP077

BIOMEDICAL EQUIPMENT
REPAIRMAN

GRP071

MERC UNSCHEDULED
MAINTENANCE SPECIALIST

GRP056

GENERAL HOSPITAL
MAINTENANCE SPECIALIST

GRP051

X-RAY TECHNICIAN

GRP062

GENERAL HOSPITAL/DENTAL
EQUIPMENT SPECIALIST

GRP032

BIOMEDICAL EQUIPMENT
ANALYST/X-RAY TECHNICIAN

GRP049

MERC UNSCHEDULED
MAINTENANCE TECHNICIAN

GRP068

PREVENTIVE MAINTENANCE
SPECIALIST

GRP018

SUPERINTENDENT/NCOIC OF
MAINTENANCE

GRP009

GRP001

FIGURE 1

32 percent to MERCs. On the average they spend ninety percent of their time maintaining biomedical equipment. According to these survey respondents, they perform very few tasks associated with non-biomedical equipment or supervision. Although the members of the cluster indicated working in all areas of the hospital, Maintaining Laboratory Equipment (Duty K) tasks were more time consuming for them than for incumbents in any other group. Another item which made this group unusual was the fact that they perform more tasks (731) on the average than personnel in any other group identified.

MERC Unscheduled Maintenance Specialist (GRP056)

This job type consists of personnel assigned to MERCs having nine or more personnel assigned. They indicated unscheduled maintenance as their section assignment. One fifth of their time is spent on tasks dealing with Maintaining General Hospital Equipment (Duty R).

General Hospital Maintenance Specialist (GRP051)

Members of this job type group perform maintenance in all areas of the hospital. Seventy-eight percent are assigned to MERCs or large facilities with eight or more personnel assigned. The group has an average time in career field (TICF) of 27 months.

X-Ray Technician (GRP062)

This job type is a small group of highly experienced personnel assigned to MERCs. They specialize in Maintaining X-Ray Equipment (Duty H).

General Hospital/Dental Equipment Specialist (GRP032)

This cluster consists of survey respondents who divide their time evenly between Maintaining General Hospital Equipment (Duty R) tasks and Maintaining Dental Equipment (Duty M) tasks. Like incumbents in the other groups they also perform tasks in all areas of the hospital.

Biomedical Equipment Analyst/X-Ray Technician (GRP049)

Personnel in this job type spend 36 percent of their time on Maintaining X-Ray (Duty H) tasks and Inspecting, Operational Testing, or Analyzing Medical Equipment (Duty F) tasks. They are all assigned to MERCs and are highly experienced. They spend five percent of their time on Maintaining General Hospital Equipment (Duty R) tasks. The average TICF for the group members is 103 months.

MERC Unscheduled Maintenance Technician (GRP068)

This job type consists of personnel who are all assigned to unscheduled maintenance, and are working in a MERC or large facility with nine or more personnel assigned. They spend 10 percent of their time on General Hospital Equipment (Duty R) tasks. The average TICF is 35 months.

Preventive Maintenance Specialist (GRP018)

Ninety-two percent of the incumbents in this job type are assigned to preventive maintenance functions at large facilities with nine or more personnel. The group members spend more time (13 percent) on Maintenance Administration Functions (Duty E) tasks than any other group of respondents.

Superintendent/NCOIC Biomedical Equipment Maintenance (GRP009)

Incumbents in this job type perform the smallest number of tasks. Organizing and Planning (Duty A) tasks accounts for over one fourth (26 percent) of their time. In addition, tasks dealing with General Maintenance Tasks (Duty S), Maintaining X-Ray Equipment (Duty H), Maintaining Dental Equipment (Duty M), and Inspecting Operational Testing or Analyzing Medical Equipment (Duty F) account 30 percent of their time. The average TICF for the group is 110 months. Overall, task performance data for members of this group are very similar to the 9-skill level description.

ANALYSIS OF AFM 39-1 JOB DESCRIPTIONS AND DAFSC GROUPS

Analysis of AFM 39-1 Job Descriptions

Specialty descriptions for AFSCs 40330, 40350, 40370, and 40390 in AFM 39-1 were compared with occupational survey data. The duties and responsibilities indicated for the semi-skilled specialist, technician, and superintendent are supported by survey data. Tasks performed by significant numbers of biomedical personnel were addressed in the specialty descriptions. For more details each DAFSC is described below and compared with the DAFSC higher on the ladder.

Analysis of DAFSC Groups

Table 4 shows the average amounts of time spent by DAFSC 40350 personnel on tasks in the job inventory duties. In general, Biomedical Equipment Repair specialists perform a wide variety of tasks. The average 5-skill level respondent indicated performing 545 of 1294 tasks in the job inventory. Table 5 illustrates the variety of tasks performed by substantial percentages of DAFSC 40350 incumbents. Tasks from Maintaining Laboratory Equipment, (Duty K) Maintaining General Hospital Equipment, (Duty R) and Maintaining Dental Equipment (Duty M) account for 35 percent of the working time of the 5-skill level personnel.

The time spent on tasks from job inventory duties (Table 4) for the DAFSC 40370 incumbents is very similar to that for DAFSC 40350 personnel. Seven-skill level personnel perform a wide variety of tasks. They also concentrate a portion of their working time on Maintaining Laboratory Equipment (Duty K) tasks. Maintaining General Hospital Equipment (Duty R) tasks and Maintaining Dental Equipment (Duty M) tasks for a combined total of 29 percent. On the average 7-skill level personnel perform 514 out of 1294 tasks in the job inventory. Table 6 illustrates the variety of tasks performed by substantial percentages of DAFSC 40370 incumbents.

The largest differences in percent performing between 5-skill level and 7-skill level personnel are shown in Table 7. Tasks from Organizing and Planning (Duty A) reflect the largest difference. In addition, fifty-one percent of the 7-skill level personnel indicate they supervise, while only ten percent of the 5-skill level personnel indicate they supervise.

Table 8 shows the tasks performed by substantial percentages of DAFSC 40390 personnel. In contrast to the 5-skill level and 7-skill level incumbent, the average 9-skill level person performs only 257 tasks out of 1294 tasks in the job inventory. Thirty-three percent of their time involves tasks related to Organizing and Planning (Duty A). An additional 10 percent is accounted for by Perform Maintenance Administration Functions (Duty E) tasks. The time spent performing maintenance tasks is greatly reduced from the 7- to the 9-skill level; however, the 9-skill level personnel continue to spend 30 percent of their time performing actual maintenance tasks.

TABLE 4
AVERAGE PERCENT TIME SPENT ON DUTIES BY DAFSC GROUPS

DUTY	DAFSC GROUPS		
	40350 (N=154)	40370 (N=121)	40390 (N=13)
A ORGANIZING AND PLANNING	1	4	33
B DIRECTING AND IMPLEMENTING	1	2	9
C EVALUATING	3	4	8
D TRAINING	3	4	9
E PERFORM MAINTENANCE ADMINISTRATION FUNCTIONS	7	8	10
F INSPECTING, OPERATIONAL TESTING, OR ANALYZING MEDICAL EQUIPMENT	8	8	7
G OPERATING MEDICAL CALIBRATION AND TROUBLESHOOTING SYSTEMS	1	1	1
H MAINTAINING X-RAY EQUIPMENT	7	8	5
I MAINTAINING INHALATION THERAPY EQUIPMENT	4	4	1
J MAINTAINING CARDIAC CARE UNIT OR INTENSIVE CARE UNIT (CCU/ICU) EQUIPMENT	6	5	2
K MAINTAINING LABORATORY EQUIPMENT	12	9	4
L MAINTAINING SURGICAL EQUIPMENT	6	5	1
M MAINTAINING DENTAL EQUIPMENT	11	10	2
N MAINTAINING EYE, EAR, NOSE, AND THROAT (EENT) EQUIPMENT	5	5	1
O MAINTAINING OBSTETRIC OR NURSERY EQUIPMENT	3	3	1
P MAINTAINING PHYSICAL THERAPY EQUIPMENT	3	2	1
Q MAINTAINING WARD EQUIPMENT	4	4	1
R MAINTAINING GENERAL HOSPITAL EQUIPMENT	12	10	2
S PERFORMING GENERAL MAINTENANCE TASKS	3	3	*
T SUPPORTING FIELD HOSPITAL OPERATIONS	*	*	*
U PERFORMING FIRST AID PROCEDURES	*	*	*

* LESS THAN ONE PERCENT

TABLE 5

TASKS PERFORMED BY SUBSTANTIAL PERCENTAGES OF DAFSC 40350 INCUMBENTS

TASK	PERCENT PERFORMING
F15 MEASURE CONDUCTIVITY OF EQUIPMENT TO FLOOR	97
E27 PREPARE INSPECTION CHECKLISTS	96
F14 MEASURE BELT TENSIONS	96
M25 ISOLATE MALFUNCTIONS TO DENTAL FURNACE CIRCUITS OR MODULES	90
M27 ISOLATE MALFUNCTIONS TO DENTAL LATHE CIRCUITS OR MODULES	90
I25 ISOLATE MALFUNCTIONS TO ULTRASONIC NEBULIZER COMPONENTS	90
C10 IDENTIFY ANNUAL REPLACEMENT REQUIREMENTS	88
F3 EXTRACT CIRCUITS FROM SCHEMATIC OR WIRING SYSTEMS	88
J8 CALIBRATE OR ADJUST PACEMAKERS	88
F7 INSPECT FACILITIES FOR ADEQUATE UTILITIES, VENTILATION, OR HUMIDITY	87
L32 PERFORM ELECTROSURGICAL SYSTEM OPERATIONAL CHECKS	87
R48 ISOLATE MALFUNCTIONS TO SOLUTION CABINET CIRCUITS OR MODULES	87
Q35 PERFORM VAPORIZER OPERATIONAL CHECKS	84
K11 CALIBRATE OR ADJUST DEMINERALIZERS	82
R17 CALIBRATE OR ADJUST SANITIZERS	82
K186 REMOVE OR INSTALL TISSUE PROCESSOR CIRCUITS OR MODULES	81
K185 REMOVE OR INSTALL SPECTROPHOTOMETRIC COMPONENTS	79
R87 PERFORM UROLOGICAL TABEL OPERATIONAL CHECKS	79
K66 ISOLATE MALFUNCTIONS TO GAS CHROMATOGRAPH CIRCUITS OR MODULES	78

TABLE 6
TASKS PERFORMED BY SUBSTANTIAL PERCENTAGES
OF DAFSC 40370 INCUMBENTS

TASK	PERCENT PERFORMING
E27 PREPARE INSPECTION CHECKLISTS	95
C23 SELECT INDIVIDUALS FOR SPECIALIZED TRAINING	94
D9 DEVELOP PLANS OR INSTRUCTION	94
F20 MEASURE EQUIPMENT READY RESPONSE TIMES	93
E21 KEYPUNCH MAINTENANCE DATA	92
F15 MEASURE CONDUCTIVITY OF EQUIPMENT TO FLOOR	92
S11 CONNECT THREADED FITTINGS	88
E25 PREPARE COST ESTIMATES FOR REPLACEMENT OF EQUIPMENT	87
L20 ISOLATE MALFUNCTIONS TO PNEUMATIC DRILL COMPONENTS	83
L30 PERFORM DERMATOME OPERATIONAL CHECKS	80
F10 INTERPRET OSCILLOSCOPE WAVEFORMS	79
Q34 PERFORM THERMOTIC SUCTION EQUIPMENT OPERATIONAL CHECKS	79
M27 ISOLATE MALFUNCTIONS TO DENTAL LATHE CIRCUITS OR MODULES	78
E48 REVIEW OR UPDATE MICROFICHE DATA BANKS	74
H18 CALIBRATE OR ADJUST THREE-PHASE X-RAY SYSTEMS	74
M6 CALIBRATE OR ADJUST DENTAL FURNACES	74
R48 ISOLATE MALFUNCTIONS TO SOLUTION CABINET CIRCUITS OR MODULES	74
I23 ISOLATE MALFUNCTIONS TO SPIROMETER COMPONENTS	73
E38 REVIEW OR CORRECT MEDICAL STOCK STATUS LISTINGS	72
H32 ISOLATE MALFUNCTIONS TO BATTERY OPERATED MOBILE DIAGNOSTIC X-RAY SYSTEM CIRCUITS OR MODULES	71

TABLE 7

TASKS WHICH MOST CLEARLY DISTINGUISH
BETWEEN 5-SKILL LEVEL PERSONNEL AND 7-SKILL LEVEL PERSONNEL

TASK	PERCENT PERFORMING		DIFFERENCE
	5-SKILL LEVEL	7-SKILL LEVEL	
B7 DRAFT OR REVISE JOB DESCRIPTIONS	14	67	-53
A18 ESTABLISH PERFORMANCE STANDARDS FOR MAINTENANCE PERSONNEL	13	62	-49
A3 COORDINATE MAINTENANCE ACTIVITIES WITH OTHER HOSPITAL AGENCIES	17	64	-47
A1 ACT AS TRAINING ADVISOR FOR MEDICAL TECHNICIANS OR EQUIPMENT OPERATORS	9	48	-39
A14 DEVELOP SCHEDULED MAINTENANCE PROCEDURES	19	58	-39
B5 DIRECT EQUIPMENT MODIFICATIONS	15	50	-35
B14 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	18	51	-33
A16 ESTABLISH BENCH STOCK LEVEL REQUIREMENTS	39	40	-31
A2 CONDUCT OR PARTICIPATE IN STAFF MEETINGS	23	53	-30
A4 COORDINATE MAINTENANCE FUNCTIONS WITH CIVIL ENGINEERING OR OTHER MAINTENANCE ACTIVITIES	41	71	-30
B17 SUPERVISE APPRENTICE BIOMEDICAL EQUIPMENT MAINTENANCE SPECIALISTS (AFSC 40330)	9	39	-30
C1 DRAFT STAFF STUDIES, SURVEYS, OR SPECIAL REPORTS	9	39	-30
A32 SCHEDULE ADVANCED OR SPECIAL TRAINING	30	58	-28
A35 SERVE ON HOSPITAL EQUIPMENT REVIEW AUTHORIZATION ACTIVITIES (HERRA)	31	58	-27
B18 SUPERVISE BIOMEDICAL EQUIPMENT MAINTENANCE REPAIRMEN (AFSC 40350)	39	63	-24
C21 PREPARE CIVILIAN PERFORMANCE RATINGS	38	62	-24

TABLE 8

TASKS PERFORMED BY SUBSTANTIAL PERCENTAGES
OF DAFSC 40390 INCUMBENTS

TASK	PERCENT PERFORMING
A1 ACT AS TRAINING ADVISOR FOR MEDICAL TECHNICIANS OR EQUIPMENT OPERATORS	92
A3 COORDINATE MAINTENANCE ACTIVITIES WITH OTHER HOSPITAL AGENCIES	92
A16 ESTABLISH BENCH STOCK LEVEL REQUIREMENTS	92
B7 DRAFT OR REVISE JOB DESCRIPTIONS	92
A4 COORDINATE MAINTENANCE FUNCTIONS WITH CIVIL ENGINEERING OR OTHER MAINTENANCE ACTIVITIES	85
B3 COUNSEL SUBORDINATES ON JOB PERFORMANCE OR PERSONAL PROBLEMS	85
D21 TRAIN MEDICAL WARD TECHNICIANS, PHYSICIANS, OR EQUIPMENT OPERATORS	85
A24 PLAN CONTRACT MAINTENANCE PROGRAMS	77
A25 PLAN ELECTRICAL OR EQUIPMENT SAFETY PROGRAMS	77
A31 PREPARE UNIT EMERGENCY OR DISASTER PLANS OR RECALL LISTS	77
B5 DIRECT EQUIPMENT MODIFICATIONS	77
B18 SUPERVISE BIOMEDICAL EQUIPMENT MAINTENANCE REPAIRMEN (AFSC 40350)	77
C13 EVALUATE SAFETY PROGRAMS	77
B14 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	69
C1 DRAFT STAFF STUDIES, SURVEYS, OR SPECIAL REPORTS	69
D9 DEVELOP PLANS OR INSTRUCTION	69
D12 ESTABLISH OR MAINTAIN STUDY REFERENCE FILES	69
E6 ANNOTATE OR UPDATE MANUFACTURER'S LITERATURE	69
E18 INITIATE OR ANNOTATE WORK REQUEST FORMS (AF FORM 332)	69
C21 PREPARE CIVILIAN PERFORMANCE RATINGS	62
D17 MAINTAIN TRAINING RECORDS, CHARTS, OR GRAPHS	62

Table 9 illustrates the greatest task performance differences between the 7-skill level and 9-skill level personnel. While the 7-skill level person performs some supervisory tasks he continues to function mainly as a technician. The 9-skill level person functions mainly as a supervisor. The average 9-skill level incumbent has approximately 11 years in the career field and the average 7-skill level has approximately six years in the career field. ✓

TABLE 9

TASKS WHICH MOST CLEARLY DISTINGUISH BETWEEN
7-SKILL LEVEL PERSONNEL AND 9-SKILL LEVEL PERSONNEL

TASK	7-SKILL LEVEL	9-SKILL LEVEL	DIFFERENCE
R99 REMOVE OR INSTALL DISTILLATION APPARATUS COMPONENTS	84	15	69
L32 PERFORM ELECTROSURGICAL SYSTEM OPERATIONAL CHECKS	82	15	67
M7 CALIBRATE OR ADJUST DENTAL OPERATING UNITS	79	15	64
E47 REVIEW OR UPDATE MEDICAL REPAIR PARTS REFERENCE LISTINGS	83	23	60
I43 REMOVE OR INSTALL FLOWMETER COMPONENTS	83	23	60
K11 CALIBRATE OR ADJUST DEMINERALIZERS	74	15	59
S10 CONNECT FLARED FITTINGS	88	31	57
L30 PERFORM DERMATOME OPERATIONAL CHECKS	80	23	57
I25 ISOLATE MALFUNCTIONS TO ULTRASONIC NEBULIZER COMPONENTS	79	23	56
F16 MEASURE CONDUCTIVITY OF EQUIPMENT ACCESSORIES OR ATTACHMENTS	93	38	55
B12 IMPLEMENT SUGGESTION PROGRAMS	17	85	-68
A30 PLAN OR SCHEDULE INSTRUCTOR TRAINING PROGRAMS	21	85	-64
B6 DIRECT THE MAINTENANCE OF ADMINISTRATIVE FILES	17	77	-60
A27 PLAN EQUIPMENT INSTALLATIONS	36	92	-56
B3 COUNSEL SUBORDINATES ON JOB PERFORMANCE OR PERSONAL PROBLEMS	31	85	-54
A16 ESTABLISH BENCH STOCK LEVEL REQUIREMENTS	40	92	-52
A20 ESTABLISH PERSONNEL REQUIREMENTS	33	85	-52
A13 DEVELOP PROCEDURES FOR SPARE PARTS STORAGE OR CONTROL	27	77	-50

COMPARISONS OF CONUS VS OVERSEAS TASK PERFORMANCE

DAFSC 40350 personnel stationed in the CONUS were compared to DAFSC 40350 personnel stationed overseas. The average number of tasks performed by CONUS personnel was 531 as compared to an average number of 630 tasks performed by overseas personnel. While overseas incumbents have broader work responsibilities, overall differences between the groups in members performing tasks and time spent on tasks from job inventory duties were minimal. Table 11 illustrates the tasks where the greatest difference in percent members performing performance occur. Overseas personnel appear to have a greater opportunity to perform a wider variety of tasks, because of limited contract maintenance. In addition to regular hospital tasks, 38 percent of the overseas personnel perform tasks dealing with Supporting Field Hospital Operations (Duty T).

TABLE 11

TASKS MOST CLEARLY DISTINGUISHING CONUS VS OVERSEAS DAFSC 40350 PERSONNEL
IN PERCENT MEMBERS PERFORMING

TASK	DAFSC 40350 PERSONNEL			DIFFERENCE
	CONUS (N=131)	OVERSEAS (N=24)		
E32 REVIEW OR CORRECT ACTIVITY BACK ORDER REPORT LISTINGS	88	50		38
C20 PREPARE AIRMAN PERFORMANCE REPORTS (APR)	78	42		36
E30 REVIEW MEDICAL EQUIPMENT MAINTENANCE RECORD FORMS (AF FORM 509)	88	54		34
S6 CLEAN OR LUBRICATE SHOP HAND OR POWER TOOLS	58	25		33
H41 ISOLATE MALFUNCTIONS TO MAMOGRAPHY SYSTEM COMPONENTS	37	8		29
H10 CALIBRATE OR ADJUST MANUAL FILM PROCESSING SYSTEMS	34	8		26
J79 REMOVE OR INSTALL PHYSIOLOGICAL MONITOR CIRCUITS OR MODULES	51	88		-37
R11 CALIBRATE OR ADJUST FOOD CARTS	11	46		-35
K100 PERFORM CELL WASHER OPERATIONAL CHECKS	41	75		-34
J67 REMOVE OR INSTALL EEG CIRCUITS OR MODULES	13	46		-33
K91 ISOLATE MALFUNCTIONS TO TISSUE PROCESSOR CIRCUITS OR MODULES	63	96		-33
K99 PERFORM BLOOD GAS ANALYZER OPERATIONAL CHECKS	38	71		-33
K143 REMOVE OR INSTALL CHLORIDOMETER COMPONENTS	40	71		-31
Q4 ADJUST MANUAL BED COMPONENTS	23	54		-31
I26 ISOLATE MALFUNCTIONS TO VOLUME VENTILATOR CIRCUITS OR MODULES	15	45		-30
K88 ISOLATE MALFUNCTIONS TO SLIDE STAINER COMPONENTS	53	83		-30
J16 ISOLATE MALFUNCTIONS TO ARRHYTHMIA MONITOR COMPONENTS	13	42		-29
R79 PERFORM SANITIZER OPERATIONAL CHECKS	34	63		-29
M24 ISOLATE MALFUNCTIONS TO DENTAL ENGINE COMPONENTS	51	79		-28
K13 CALIBRATE OR ADJUST ELECTRONIC PARTICLE COUNTING SYSTEMS	31	58		-27

ANALYSIS OF TIME IN CAREER FIELD GROUPS (TICF)

In this section task performance comparisons were made among three groups of AFS 403X0 personnel with varying amounts of time in the career field. Table 10 lists the average percent time spent on tasks from each job inventory duty.

Sixty-three percent of the sample had between one and forty-eight months time in the career field (TICF). Incumbents with 49 months to 96 months TICF accounted for an additional 24 percent. Task performance data for personnel in these two groups is very similar. Generally, most of their time is spent on tasks related to Maintaining Laboratory Equipment (Duty K), Maintaining Dental Equipment (Duty M), and Maintaining General Hospital Equipment (Duty R). For members with 49 to 96 months TICF there continues to be a substantial amount of time spent on maintenance. There is a small increase in time spent, for incumbents in this group, on Organizing and Planning (Duty A) tasks. ✓

The average TICF for all airmen in the sample is 52 months, while the average active federal military service (AFMS) is 117 months. This difference reflects the large number of personnel who cross train into the Biomedical Equipment Repair specialty. The largest number (66 percent) cross train at the 49-96 months period but do not remain in the service. This condition is also reflected by an inflated reenlistment rate for first term airmen noted earlier in the Summary Of Background Data section. Percentages of personnel who reenlist after their first reenlistment are below Air Force average. The result is a declining level of career field experience. (More data on this topic is contained later in this report where the current survey is compared with a 1973 survey). ✓

TABLE 10

PERCENT TIME SPENT ON EACH DUTY BY TIME IN CAREER FIELD

DUTY	MONTHS IN CAREER FIELD		
	1-48 (N=194)	49-96 (N=73)	97+ (N=39)
A ORGANIZING AND PLANNING	2	4	10
B DIRECTING AND IMPLEMENTING	1	2	4
C EVALUATING	3	4	5
D TRAINING	3	5	6
E PERFORM MAINTENANCE ADMINISTRATION FUNCTIONS	7	9	9
F INSPECTING, OPERATIONAL TESTING, OR ANALYZING MEDICAL EQUIPMENT	8	8	9
G OPERATING MEDICAL CALIBRATION AND TROUBLESHOOTING SYSTEMS	1	1	1
H MAINTAINING X-RAY EQUIPMENT	7	8	8
I MAINTAINING INHALATION THERAPY EQUIPMENT	4	4	3
J MAINTAINING CARDIAC CARE UNIT OR INTENSIVE CARE UNIT (CCU/ICU) EQUIPMENT	5	5	4
K MAINTAINING LABORATORY EQUIPMENT	11	10	8
L MAINTAINING SURGICAL EQUIPMENT	6	5	4
M MAINTAINING DENTAL EQUIPMENT	11	10	8
N MAINTAINING EYE, EAR, NOSE, AND THROAT (EENT) EQUIPMENT	5	5	3
O MAINTAINING OBSTETRIC OR NURSERY EQUIPMENT	3	3	2
P MAINTAINING PHYSICAL THERAPY EQUIPMENT	3	2	2
Q MAINTAINING WARD EQUIPMENT	4	3	2
R MAINTAINING GENERAL HOSPITAL EQUIPMENT	12	9	7
S PERFORMING GENERAL MAINTENANCE TASKS	3	2	4
T SUPPORTING FIELD HOSPITAL OPERATIONS	*	*	*
U PERFORMING FIRST AID PROCEDURES	0	0	0

* LESS THAN ONE PERCENT

TASK DIFFICULTY

From a listing of airmen identified for the Biomedical Equipment Maintenance career ladder incumbents in the 7- and 9-skill level from various commands and locations were selected to rate task difficulty. Tasks were rated on a nine-point scale from very-much-below average difficulty to very-much-above average difficulty, with difficulty defined as the length of time required by an average incumbent to learn to do the task. Interrater agreement was .98. Ratings were adjusted so that tasks of average difficulty have ratings of 5.00.

Of 1294 tasks in the survey instrument 618 were rated 5.0 (average) or above difficulty to learn. Table 12 lists the most difficult tasks performed by at least 25 percent of the survey respondents. The duties concerning Maintaining X-Ray Equipment (Duty A) and Maintaining Cardiac Care Unit or Intensive Care Unit (CCU/ICU) Equipment (Duty J) contain the greatest numbers of tasks which are rated above average in difficulty. These tasks are primarily associated with isolating malfunctions to components, circuits and modules, and calibration procedures. As shown in Table 12, a substantial number of personnel perform the more difficult tasks.

The remaining 641 tasks were rated below average in difficulty. Table 13 lists 20 of the least difficult tasks performed by 25 percent or more of the survey incumbents. These tasks are generally associated with operational checks and removing or installing of system components.

TABLE 12

MOST DIFFICULT TASKS PERFORMED BY 25 PERCENT OR MORE OF SURVEY RESPONDENTS

TASK	PERCENT MEMBERS PERFORMING	DIFFICULTY INDEX
H7 CALIBRATE OR ADJUST COBALT THERAPY SYSTEMS	37	7.9
H78 CALIBRATE OR ADJUST THREE-PHASE X-RAY SYSTEMS	64	7.9
H51 ISOLATE MALFUNCTIONS TO RADIOISOTOPE COUNTING AND SCANNING SYSTEM COMPONENTS	26	7.7
H59 ISOLATE MALFUNCTIONS TO THREE-PHASE X-RAY SYSTEM COMPONENTS	52	7.7
H14 CALIBRATE OR ADJUST RADIOISOTOPE COUNTING AND SCANNING SYSTEMS	58	7.6
H58 ISOLATE MALFUNCTIONS TO THREE-PHASE X-RAY SYSTEM CIRCUITS OR MODULES	25	7.6
H82 PERFORM PRE-INSTALLATION SURVEYS FOR X-RAY EQUIPMENT	53	7.6
H8 CALIBRATE OR ADJUST IMAGE INTENSIFICATION SYSTEMS	41	7.4
H35 ISOLATE MALFUNCTIONS TO CINE SYSTEM COMPONENTS	40	7.4
H38 ISOLATE MALFUNCTIONS TO IMAGE INTENSIFICATION SYSTEM CIRCUITS OR MODULES	52	7.4
J40 ISOLATE MALFUNCTIONS TO TELEMETRY SYSTEM COMPONENTS	27	7.4
H34 ISOLATE MALFUNCTIONS TO CINE SYSTEM CIRCUITS OR MODULES	63	7.3
H40 ISOLATE MALFUNCTIONS TO MAMOGRAPHY SYSTEM CIRCUITS OR MODULES	41	7.3
H62 ISOLATE MALFUNCTIONS TO VIDEO RECORDING SYSTEM CIRCUITS OR MODULES	33	7.3
H61 ISOLATE MALFUNCTIONS TO ULTRASOUND DIAGNOSTIC SYSTEM COMPONENTS	32	7.3
J39 ISOLATE MALFUNCTIONS TO TELEMETRY SYSTEM CIRCUITS OR MODULES	50	7.3
H9 CALIBRATE OR ADJUST MAMOGRAPHY SYSTEMS	26	7.2
H17 CALIBRATE OR ADJUST THERMOGRAPHY SYSTEMS	67	7.2
H60 ISOLATE MALFUNCTIONS TO ULTRASOUND DIAGNOSTIC SYSTEM CIRCUITS OR MODULES	57	7.2
J41 ISOLATE MALFUNCTIONS TO VCG CIRCUITS OR MODULES	26	7.1
H41 ISOLATE MALFUNCTIONS TO MAMOGRAPHY SYSTEM COMPONENTS	30	7.0
H81 PERFORM POST CALIBRATION RADIATION INSPECTIONS (PCRI) OF X-RAY EQUIPMENT	47	7.0

TABLE 13

LEAST DIFFICULT TASKS PERFORMED BY 25 PERCENT OR MORE OF SURVEY RESPONDENTS

TASK	PERCENT MEMBERS PERFORMING	DIFFICULTY INDEX
E20	80	2.6
R53	44	2.8
R89	67	2.8
R90	42	2.8
M64	38	2.9
R45	45	2.9
R131	62	2.9
F42	46	3.0
R130	45	3.0
F50	36	3.1
R72	57	3.1
R120	37	3.1
E1	58	3.2
M61	67	3.2
Q33	37	3.2
R82	31	3.2
S11	88	3.2
E24		3.2
E30	28	3.3
R61	73	3.3
S8	59	3.3
S10	65	3.3
	86	3.3

ISSUE TOOLS
 ISOLATE MALFUNCTIONS TO STETHOSCOPE COMPONENTS
 PERFORM WHEELCHAIR OPERATIONAL CHECKS
 PERFORM WHEELED LITTER OPERATIONAL CHECKS
 PERFORM DENTAL STOOL OPERATIONAL CHECKS
 ISOLATE MALFUNCTIONS TO IV STAND COMPONENTS
 REMOVE OR INSTALL WHEELED LITTER COMPONENTS
 PERFORM ELECTRICAL OUTLETS TENSION TESTS
 REMOVE OR INSTALL WHEELCHAIR COMPONENTS
 VISUALLY INSPECT EQUIPMENT FOR INTERNAL OR EXTERNAL CLEANLINESS
 PERFORM EXAMINATION TABLE LAMP OPERATIONAL CHECKS
 REMOVE OR INSTALL SPHYGMOMANOMETER COMPONENTS
 ANNOTATE AND ATTACH CONDITION TAGS TO EQUIPMENT
 PERFORM DENTAL OPERATING LAMP OPERATIONAL CHECKS
 PERFORM OVERBED OR BEDSIDE TABLE OPERATIONAL CHECKS
 PERFORM SPHYGMOMANOMETER OPERATIONAL CHECKS
 CONNECT THREADED FITTINGS
 POST ENTRIES AND ATTACH EQUIPMENT WARRANTY OR SAFETY TAGS OR LABELS TO EQUIPMENT
 REVIEW MEDICAL EQUIPMENT MAINTENANCE RECORD FORMS (AF FORM 509)
 ISOLATE MALFUNCTIONS TO WHEELED LITTER COMPONENTS
 CONNECT COMPRESSION FITTINGS
 CONNECT FLARED FITTINGS

COMPARISON OF SPECIALTY TRAINING STANDARD (STS) TASKS WITH OCCUPATIONAL SURVEY DATA

The STS for the AFS 403X0 career ladder, dated March 1977, was compared to survey data. Paragraphs 5, 6, 14, 15, 16, and 17 in the STS provide a comprehensive outline of the numerous biomedical systems and a general set of task statements for each system. These paragraphs were well supported by survey data. Paragraphs 3, 8, 9, 10, and 11 deal with administration, materiel, supervision and training, and maintenance management. Tasks here were also well supported by survey data.

On the other hand, paragraph 2 deals with Disaster Preparedness and First Aid Procedures. Data show zero percent responding to actual or simulated first aid tasks. The tasks in paragraph 7, Professional and Patient Relationships, such as "Perform duties with high standard of conduct" appear to be goals for all Air Force personnel and not time rateable tasks. Therefore, assignment of proficiency levels to paragraph 7 appears of questionable value. Paragraphs 1, 4, 12, and 13 consist of knowledge items which apply to the career field and were not directly measured by the job inventory.

Twenty-seven percent of the personnel sampled performed at least one task associated with Supporting Field Hospital Operations (Duty T). Twenty-three percent indicated that they maintained mobile air-transportable hospitals, air-transportable hospitals, or air-transportable clinics. There are no specific tasks in the STS for this area of biomedical maintenance.

COMPARISON TO EARLIER STUDIES

The findings of the study were compared with a survey on this specialty completed in 1973. In the earlier study the job inventory was developed with equipment items as background information and the tasks were written about principles of maintaining biomedical equipment. The current survey had tasks written for each type of biomedical equipment. Therefore direct comparison of job groups between the two studies is not practical.

In the 1973 survey report, Supervisors, Inexperienced Airmen, and Experienced Airmen were identified as clusters which formed the career ladder structure. While supervisors were identified again in the current survey, the other nine groups were identified by criteria in addition to experience, such as, equipment and function.

The current survey, like the earlier one, indicated a very gradual shift, with time, from technical to supervisory functions. This shift is never fully completed as even the most experienced Biomedical Equipment Repair personnel still perform some technical tasks. Task performance data for incumbents with 1 to 48 months TICF and 49 to 96 months TICF were very similar in both surveys.

Both the earlier survey and the current collected data concerning career field experience. Table 14 shows the average TICF by DAFSC for the sample in 1973 and in 1976. In 1973, 27 percent of the airmen had more than 96 months TICF while in 1976, 13 percent had more than 96 months TICF. This is further evidence of the decline in career field experience reported earlier in this report.

TABLE 14
AVERAGE TIME IN CAREER FIELD FOR MEMBERS GROUPED BY DAFSC

DAFSC	MONTHS	
	1973	1976
403X0	72	52
40350	32	33
40370	93	72
40390	210	139

CONCLUSIONS AND RECOMMENDATIONS

1. Personnel in the Biomedical Equipment Maintenance career ladder perform a broad range of electronic, electromechanical, and mechanical maintenance tasks. Tasks associated with maintaining laboratory and dental equipment are the most time consuming. These two areas should receive top priority for planning training.
2. In addition to complex technical tasks, most personnel perform maintenance management procedures. This holds true for 3-skill level personnel as well as 9-skill personnel.
3. The level of experience in this specialty has decreased considerably over the past four years. Some consideration should be given to personnel actions which could encourage reenlistment of airmen with four to eight years experience in the career field.
4. Fifty-nine percent of the Air Force medical facilities have one or two person shops. Experience in the career field in addition to DAFSC needs to be a consideration for assignment to these shops. Identification of levels of experience in the career field, as well as, advanced schools completed would be helpful.

GROUP ID NUMBER AND TITLE: GRP077, DENTAL EQUIPMENT MAINTENANCE TECHNICIAN

PERCENT OF SAMPLE: 9%

MAJOR COMMAND DISTRIBUTION: PACAF (21%), USAF (21%), ATC (14%), OTHER (44%)

LOCATION: CONUS (52%), OVERSEAS (48%)

DAFSC DISTRIBUTION: 40350 (38%), 40370 (62%)

AVERAGE GRADE: 5

AMOUNT OF SUPERVISION: 31 PERCENT SUPERVISED AN AVERAGE OF ONE SUBORDINATE

PERCENT OF GROUP IN FIRST ENLISTMENT: 17%

EXPRESSED JOB INTEREST: FAIRLY TO EXTREMELY INTERESTING (76%)

PERCEIVED UTILIZATION OF TALENTS: VERY WELL TO PERFECTLY (93%)

PERCEIVED UTILIZATION OF TRAINING: VERY WELL TO PERFECTLY (93%)

AVERAGE NUMBER OF TASKS PERFORMED: 404

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
M MAINTAINING DENTAL EQUIPMENT	18
R MAINTAINING GENERAL HOSPITAL EQUIPMENT	10
F INSPECTING, OPERATIONAL TESTING, OR ANALYZING MEDICAL EQUIPMENT	8
K MAINTAINING LABORATORY EQUIPMENT	8
L MAINTAINING SURGICAL EQUIPMENT	8

FIVE REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
F15 MEASURE CONDUCTIVITY OF EQUIPMENT TO FLOOR	100
L58 REMOVE OR INSTALL WET VACUUM CLEANER COMPONENTS	100
M2 CALIBRATE OR ADJUST AMALGAMATORS	100
M33 ISOLATE MALFUNCTIONS TO DENTAL OPERATING LAMP COMPONENTS	100
R16 ISOLATE MALFUNCTIONS TO ELECTRIC BED CIRCUITS OR MODULES	93

GROUP ID NUMBER AND TITLE: GRP071, BIOMEDICAL EQUIPMENT REPAIRMAN

PERCENT OF SAMPLE: 50%

MAJOR COMMAND DISTRIBUTION: SAC (21%), TAC (21%), MAC (13%), ATC (13%),
OTHER (32%)

LOCATION: CONUS (87%), OVERSEAS (13%)

DAFSC DISTRIBUTION: 40330 (3%), 40350 (59%), 40370 (37%), 40390 (1%)

AVERAGE GRADE: 5

AMOUNT OF SUPERVISION: 36 PERCENT SUPERVISED AN AVERAGE OF ONE SUBORDINATE

PERCENT OF GROUP IN FIRST ENLISTMENT: 32%

EXPRESSED JOB INTEREST: FAIRLY TO EXTREMELY INTERESTING (66%)

PERCEIVED UTILIZATION OF TALENTS: VERY WELL TO PERFECTLY (88%)

PERCEIVED UTILIZATION OF TRAINING: VERY WELL TO PERFECTLY (88%)

AVERAGE NUMBER OF TASKS PERFORMED: 731

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
K MAINTAINING LABORATORY EQUIPMENT	13
R MAINTAINING GENERAL HOSPITAL EQUIPMENT	12
M MAINTAINING DENTAL EQUIPMENT	11
H MAINTAINING X-RAY EQUIPMENT	8
N MAINTAINING EYE, EAR, NOSE, AND THROAT (EENT) EQUIPMENT	6

FIVE REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
J14 INSTALL CCU/ICU EQUIPMENT	100
E21 KEYPUNCH MAINTENANCE DATA	98
M59 PERFORM DENTAL MODEL TRIMMER OPERATIONAL CHECKS	97
R17 CALIBRATE OR ADJUST SANITIZERS	96
N44 PERFORM OTOSCOPE OPERATIONAL CHECKS	90

GROUP ID NUMBER AND TITLE: GRP056, MERC UNSCHEDULED MAINTENANCE SPECIALIST

PERCENT OF SAMPLE: 2%

MAJOR COMMAND DISTRIBUTION: AFSC (60%), PACAF (20%), ATC (20%)

LOCATION: CONUS (80%), OVERSEAS (20%)

DAFSC DISTRIBUTION: 40350 (60%), 40370 (40%)

AVERAGE GRADE: 4

AMOUNT OF SUPERVISION: NONE

PERCENT OF GROUP IN FIRST ENLISTMENT: 40%

EXPRESSED JOB INTEREST: FAIRLY TO EXTREMELY INTERESTING (60%)

PERCEIVED UTILIZATION OF TALENTS: VERY WELL TO PERFECTLY (40%)

PERCEIVED UTILIZATION OF TRAINING: VERY WELL TO PERFECTLY (20%)

AVERAGE NUMBER OF TASKS PERFORMED: 448

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
R MAINTAINING GENERAL HOSPITAL EQUIPMENT	21
M MAINTAINING DENTAL EQUIPMENT	12
N MAINTAINING EYE, EAR, NOSE, AND THROAT (EENT) EQUIPMENT	9
K MAINTAINING LABORATORY EQUIPMENT	8
Q MAINTAINING WARD EQUIPMENT	8

FIVE REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
K10 CALIBRATE OR ADJUST CRYOSTATS	100
M7 CALIBRATE OR ADJUST DENTAL OPERATING UNITS	100
Q36 REMOVE OR INSTALL BEDPAN WARMER COMPONENTS	100
R49 ISOLATE MALFUNCTIONS TO SOLUTION CABINET COMPONENTS	100
R86 PERFORM ULTRASONIC CLEANING SYSTEM OPERATIONAL CHECKS	100

GROUP ID NUMBER AND TITLE: GRP051, GENERAL HOSPITAL MAINTENANCE SPECIALIST

PERCENT OF SAMPLE: 3%

MAJOR COMMAND DISTRIBUTION: AFSC (33%), MAC (33%), OTHER (34%)

LOCATION: CONUS (100%)

DAFSC DISTRIBUTION: 40350 (78%), 40370 (22%)

AVERAGE GRADE: 5

AMOUNT OF SUPERVISION: NONE

PERCENT OF GROUP IN FIRST ENLISTMENT: 33%

EXPRESSED JOB INTEREST: FAIRLY TO EXTREMELY INTERESTING (78%)

PERCEIVED UTILIZATION OF TALENTS: VERY WELL TO PERFECTLY (100%)

PERCEIVED UTILIZATION OF TRAINING: VERY WELL TO PERFECTLY (100%)

AVERAGE NUMBER OF TASKS PERFORMED: 350

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
R MAINTAINING GENERAL HOSPITAL EQUIPMENT	12
F INSPECT, OPERATIONAL TESTING, OR ANALYZING MEDICAL EQUIPMENT	9
H MAINTAINING X-RAY EQUIPMENT	8
K MAINTAINING LABORATORY EQUIPMENT	8
M MAINTAINING DENTAL EQUIPMENT	8

FIVE REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
E30 REVIEW MEDICAL EQUIPMENT MAINTENANCE RECORD FORMS (AF FORM 509)	100
K185 REMOVE OR INSTALL SPECTROPHOTOMETRIC COMPONENTS	100
F16 MEASURE CONDUCTIVITY OF EQUIPMENT ACCESSORIES OR ATTACHMENTS	100
R34 ISOLATE MALFUNCTIONS TO FOOD CART COMPONENTS	100
H132 REMOVE OR INSTALL XEROGRAPHY PROCESSING SYSTEM CIRCUITS OR MODULES	89

GROUP ID NUMBER AND TITLE: GRP062, X-RAY TECHNICIAN

PERCENT OF SAMPLE: 2%

MAJOR COMMAND DISTRIBUTION: AAC (20%), ATC (20%), SAC (20%), PACAF (20%),
USAFE (20%)

LOCATION: CONUS (60%), OVERSEAS (40%)

DAFSC DISTRIBUTION: 40350 (40%), 40370 (40%), 40390 (20%)

AVERAGE GRADE: 6

AMOUNT OF SUPERVISION: 60 PERCENT SUPERVISED AN AVERAGE OF ONE SUBORDINATE

PERCENT OF GROUP IN FIRST ENLISTMENT: 0%

EXPRESSED JOB INTEREST: FAIRLY TO EXTREMELY INTERESTING (80%)

PERCEIVED UTILIZATION OF TALENTS: VERY WELL TO PERFECTLY (80%)

PERCEIVED UTILIZATION OF TRAINING: VERY WELL TO PERFECTLY (100%)

AVERAGE NUMBER OF TASKS PERFORMED: 509

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
H MAINTAINING X-RAY EQUIPMENT	18
E PERFORM MAINTENANCE ADMINISTRATION FUNCTIONS	11
F INSPECTING, OPERATIONAL TESTING, OR ANALYZING MEDICAL EQUIPMENT	10
D TRAINING	7
K MAINTAINING LABORATORY EQUIPMENT	6

FIVE REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
C12 EVALUATE OPERATOR MAINTENANCE	100
D21 TRAIN MEDICAL WARD TECHNICIANS, PHYSICIANS, OR EQUIPMENT OPERATORS	100
E11 INITIATE OR ANNOTATE CONDUCTIVITY TEST RECORD FORMS (AF FORM 1762)	100
F27 MEASURE OR TEST VACUUMS	100
H47 ISOLATE MALFUNCTIONS TO NON-BATTERY OPERATED MOBILE DIAGNOSTIC X-RAY SYSTEM COMPONENTS	100

GROUP ID NUMBER AND TITLE: GRP032, GENERAL HOSPITAL/DENTAL EQUIPMENT
SPECIALIST

PERCENT OF SAMPLE: 8%

MAJOR COMMAND DISTRIBUTION: MAC (25%), SAC (21%), TAC (21%), OTHER (34%)

LOCATION: CONUS (88%), OVERSEAS (8%), NO RESPONSE (4%)

DAFSC DISTRIBUTION: 40330 (21%), 40350 (42%), 40370 (37%)

AVERAGE GRADE: 5

AMOUNT OF SUPERVISION: NONE

PERCENT OF GROUP IN FIRST ENLISTMENT: 42%

EXPRESSED JOB INTEREST: FAIRLY TO EXTREMELY INTERESTING (71%)

PERCEIVED UTILIZATION OF TALENTS: VERY WELL TO PERFECTLY (88%)

PERCEIVED UTILIZATION OF TRAINING: VERY WELL TO PERFECTLY (83%)

AVERAGE NUMBER OF TASKS PERFORMED: 268

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
M MAINTAINING DENTAL EQUIPMENT	12
R MAINTAINING GENERAL HOSPITAL EQUIPMENT	12
F INSPECTING, OPERATIONAL TESTING, OR ANALYZING MEDICAL EQUIPMENT	10
E PERFORM MAINTENANCE ADMINISTRATION FUNCTIONS	9
K MAINTAINING LABORATORY EQUIPMENT	7

FIVE REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
E27 PREPARE INSPECTION CHECKLISTS	100
N44 PERFORM OTOSCOPE OPERATIONAL CHECKS	100
L56 REMOVE OR INSTALL SURGICAL LAMP COMPONENTS	96
M25 ISOLATE MALFUNCTIONS TO DENTAL FURNACE CIRCUITS OR MODULES	96
F17 MEASURE CONDUCTIVITY OF FLOORS	95

GROUP ID NUMBER AND TITLE: GRP049, BIOMEDICAL EQUIPMENT ANALYST/X-RAY
TECHNICIAN

PERCENT OF SAMPLE: 2%

MAJOR COMMAND DISTRIBUTION: ATC (57%), MAC (29%), USAFE (14%),

LOCATION: CONUS (86%), OVERSEAS (14%)

DAFSC DISTRIBUTION: 40350 (29%), 40370 (71%)

AVERAGE GRADE: 6

AMOUNT OF SUPERVISION: 71 PERCENT SUPERVISED AN AVERAGE OF ONE SUBORDINATE

PERCENT OF GROUP IN FIRST ENLISTMENT: 0%

EXPRESSED JOB INTEREST: FAIRLY TO EXTREMELY INTERESTING (29%)

PERCEIVED UTILIZATION OF TALENTS: VERY WELL TO PERFECTLY (100%)

PERCEIVED UTILIZATION OF TRAINING: VERY WELL TO PERFECTLY (100%)

AVERAGE NUMBER OF TASKS PERFORMED: 231

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
F INSPECTING, OPERATIONAL TESTING, OR ANALYZING MEDICAL EQUIPMENT	18
H MAINTAINING X-RAY EQUIPMENT	18
E PERFORM MAINTENANCE ADMINISTRATION FUNCTIONS	8
I MAINTAINING INHALATION THERAPY EQUIPMENT	7
J MAINTAINING CARDIAC CARE UNIT OR INTENSIVE CARE UNIT (CCU/ICU) EQUIPMENT	7

FIVE REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
E25 PREPARE COST ESTIMATES FOR REPLACEMENT OF EQUIPMENT	100
F27 MEASURE OR TEST VACUUMS	100
H35 ISOLATE MALFUNCTIONS TO CINE SYSTEM COMPONENTS	100
I27 ISOLATE MALFUNCTIONS TO VOLUME VENTILATOR COMPONENTS	100
J15 ISOLATE MALFUNCTIONS TO ARRHYTHMIA MONITOR CIRCUITS OR MODULES	100

GROUP ID NUMBER AND TITLE: GRP068, MERC UNSCHEDULED MAINTENANCE TECHNICIAN

PERCENT OF SAMPLE: 2%

MAJOR COMMAND DISTRIBUTION: AFSC (40%), ATC (40%), AFLC (20%)

LOCATION: CONUS (100%)

DAFSC DISTRIBUTION: 40350 (20%), 40370 (80%)

AVERAGE GRADE: 6

AMOUNT OF SUPERVISION: 60 PERCENT SUPERVISED AN AVERAGE OF ONE SUBORDINATE

PERCENT OF GROUP IN FIRST ENLISTMENT: 0%

EXPRESSED JOB INTEREST: FAIRLY TO EXTREMELY INTERESTING (80%)

PERCEIVED UTILIZATION OF TALENTS: VERY WELL TO PERFECTLY (80%)

PERCEIVED UTILIZATION OF TRAINING: VERY WELL TO PERFECTLY (80%)

AVERAGE NUMBER OF TASKS PERFORMED: 366

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
H MAINTAINING X-RAY EQUIPMENT	17
F INSPECTING, OPERATIONAL TESTING, OR ANALYZING MEDICAL EQUIPMENT	14
R MAINTAINING GENERAL HOSPITAL EQUIPMENT	10
M MAINTAINING DENTAL EQUIPMENT	9
E PERFORM MAINTENANCE ADMINISTRATION FUNCTIONS	8

FIVE REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
E21 KEYPUNCH MAINTENANCE DATA	100
F20 MEASURE EQUIPMENT READY RESPONSE TIMES	100
H18 CALIBRATE OR ADJUST THREE-PHASE X-RAY SYSTEMS	100
M59 PERFORM DENTAL MODEL TRIMMER OPERATIONAL CHECKS	100
R114 REMOVE OR INSTALL INSTRUMENT TABLE COMPONENTS	100

GROUP ID NUMBER AND TITLE: GRP018, PREVENTIVE MAINTENANCE SPECIALIST

PERCENT OF SAMPLE: 4%

MAJOR COMMAND DISTRIBUTION: ATC (53%), AFSC (23%), MAC (15%), OTHER (9%)

LOCATION: CONUS (92%), OVERSEAS (8%)

DAFSC DISTRIBUTION: 40330 (15%), 40350 (69%), 40370 (16%)

AVERAGE GRADE: 4

AMOUNT OF SUPERVISION: NONE

PERCENT OF GROUP IN FIRST ENLISTMENT: 54%

EXPRESSED JOB INTEREST: FAIRLY TO EXTREMELY INTERESTING (52%)

PERCEIVED UTILIZATION OF TALENTS: VERY WELL TO PERFECTLY (85%)

PERCEIVED UTILIZATION OF TRAINING: VERY WELL TO PERFECTLY (54%)

AVERAGE NUMBER OF TASKS PERFORMED: 213

TIME SPENT ON DUTIES:

DUTY

AVERAGE PERCENT TIME
SPENT BY ALL MEMBERS

F	INSPECTING, OPERATIONAL TESTING, OR ANALYZING MEDICAL EQUIPMENT	17
E	PERFORM MAINTENANCE ADMINISTRATION FUNCTIONS	13
K	MAINTAINING LABORATORY EQUIPMENT	11
R	MAINTAINING GENERAL HOSPITAL EQUIPMENT	10
M	MAINTAINING DENTAL EQUIPMENT	8

FIVE REPRESENTATIVE TASKS:

TASKS

PERCENT MEMBERS
PERFORMING

E49	TRANSCRIBE WORK ORDERS OR SPARE PARTS INFORMATION FOR KEYPUNCHING	100
F16	MEASURE CONDUCTIVITY OF EQUIPMENT ACCESSORIES OR ATTACHMENTS	100
E50	TYPE OUTGOING CORRESPONDENCE, RECORDS, OR REPORTS	92
M27	ISOLATE MALFUNCTIONS TO DENTAL LATHE CIRCUITS OR MODULES	92
K185	REMOVE OR INSTALL SPECTROPHOTOMETRIC COMPONENTS	85

GROUP ID NUMBER AND TITLE: GRP009, SUPERINTENDENT/NCOIC MAINTENANCE

PERCENT OF SAMPLE: 5%

MAJOR COMMAND DISTRIBUTION: ATC (18%), TAC (18%), OTHER (64%)

LOCATION: CONUS (71%), OVERSEAS (29%)

DAFSC DISTRIBUTION: 40350 (18%), 40370 (29%), 40390 (53%)

AVERAGE GRADE: 7

AMOUNT OF SUPERVISION: 82 PERCENT SUPERVISED AN AVERAGE OF FOUR SUBORDINATES

PERCENT OF GROUP IN FIRST ENLISTMENT: 6%

EXPRESSED JOB INTEREST: FAIRLY TO EXTREMELY INTERESTING (82%)

PERCEIVED UTILIZATION OF TALENTS: VERY WELL TO PERFECTLY (76%)

PERCEIVED UTILIZATION OF TRAINING: VERY WELL TO PERFECTLY (71%)

AVERAGE NUMBER OF TASKS PERFORMED: 145

TIME SPENT ON DUTIES:

<u>DUTY</u>	<u>AVERAGE PERCENT TIME SPENT BY ALL MEMBERS</u>
A ORGANIZING AND PLANNING	26
E PERFORM MAINTENANCE ADMINISTRATION FUNCTIONS	13
D TRAINING	11
C EVALUATING	10
B DIRECTING AND IMPLEMENTING	9

FIVE REPRESENTATIVE TASKS:

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
D15 EVALUATE RESIDENT COURSE CLASSROOM INSTRUCTION	100
A33 SCHEDULE CORRECTIVE OR PREVENTIVE MAINTENANCE	94
C13 EVALUATE SAFETY PROGRAMS	88
A16 ESTABLISH BENCH STOCK LEVEL REQUIREMENTS	82
E9 DRAFT OR PREPARE OUTGOING CORRESPONDENCE FOR MILITARY OR CIVILIAN AGENCIES	65